Social and economic aspects of childhood health

Angelini, V.; Mierau, J.O.

university of groningen

faculty of economics and business

12002-EEF

Social and Economic Aspects of Childhood Health: Evidence from Western-Europe

Viola Angelini
Jochen O. Mierau

SOM is the the research institute of the Faculty of Economics & Business at the University of Groningen. SOM has six programmes:

- Economics, Econometrics and Finance
- Global Economics & Management
- Human Resource Management & Organizational Behaviour
- Innovation & Organization
- Marketing
- Operations Management & Operations Research

Research Institute SOM
Faculty of Economics & Business
University of Groningen

Visiting address:
Nettelbosje 2
9747 AE Groningen
The Netherlands

Postal address:
P.O. Box 800
9700 AV Groningen
The Netherlands

T +31 50 363 7068/3815

www.rug.nl/som

Social and Economic Aspects of Childhood Health: Evidence from Western-Europe*

Viola Angelini
University of Groningen & NETSPAR, The Netherlands

Jochen O. Mierau
University of Groningen & NETSPAR, The Netherlands

April, 2012

Abstract

We study how social and economic conditions relate to the health status of children using a retrospective survey for Western-Europe. We use the state of the business cycle and the level of Gross Domestic Product as indicators of the macroeconomic conditions. In order to differentiate between fetal and childhood effects, we control for macroeconomic conditions after birth separately. To measure household conditions we construct a measure of the social economic status of the household based on the number of rooms per capita in the household, the number of facilities in the house, the occupation of the main bread winner and the number of books in the household. In addition, we study the impact of episodes of hunger and the presence of both parents. Our main findings are that being born during a boom and growing up during a boom are detrimental for childhood health. In addition, the social economic status of the parents is positively associated to the health status of the child, while experiencing hunger, living without the father and growing up with a parent that drinks heavily are all negatively associated with childhood health.

*We gratefully acknowledge Mauricio Avendano and Fabrizio Mazzonna for constructive comments. This paper uses data from SHARELIFE release 1, as of November 24th 2010. The SHARE data collection has been primarily funded by the European Commission through the 5th framework programme (project QLK6-CT-2001- 00360 in the thematic programme Quality of Life), through the 6th framework programme (projects SHARE-I3, RII-CT- 2006-062193, COMPARE, CIT5-CT-2005-028857, and SHARELIFE, CIT4-CT-2006-028812) and through the 7th framework programme (SHARE-PREP, 211909 and SHARE-LEAP, 227822). Additional funding from the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, Y1-AG-4553-01 and OGHA 04-064, IAG BSR06-11, R21 AG025169) as well as from various national sources is gratefully acknowledged (see www.share-project.org for a full list of funding institutions).

1. Introduction

In this paper we use a retrospective survey to study the association between childhood health and the socio-economic and macroeconomic environment in which the child grew up.

Bad childhood health has consistently been related to adverse outcomes later in life. From the health perspective, the relationship between early infant mortality and adult height is documented by, amongst others, Deaton (2007). On the economic side, factors such as low birth weight have been connected to income and employment statuses at various stages of the adult life-cycle by Currie and Hyson (1999) and Case *et al.* (2005). Currie (2009) provides an excellent survey of the literature in this field. In the same survey, she highlights the scarce attention that has been devoted to the determinants of child health in the first place.

The socio-economic environment in which the child grows up has been the main focus of the literature aimed at understanding the determinants of childhood health. In an early survey, Spencer (2003) provides compelling evidence that globally as well as historically there exists a strong link between the socio-economic status of the parents and, for instance, the birth weight of the child. Complementing this approach, Case *et al.* (2002), Currie *et al.* (2007) and Victorino and Gauthier (2009) show that the income of the parents is strongly associated with health outcomes throughout childhood and that this association becomes stronger as the children become older. Again, we refer the reader to Currie (2009) for further references.

Recently, macroeconomic conditions during birth and childhood have been used to understand both contemporaneous outcomes and outcomes later in life. Van den Berg *et al.* (2006, 2009a and 2009b) and Portrait *et al.* (2010) show that there is a robust relation between the state of the business cycle at birth and the mortality rate later in life. The contemporaneous relationship between the state of the business cycle and health outcomes is somewhat counterintuitive in the sense that during recessions health outcomes improve dramatically (see, for instance, Ruhm, 2000, and DeHeija and Lleras-Muney, 2004). This effect is also

found if very heavy recessions such as the Great Depression are taken into account (Tapia Granados and Diez Roux, 2009).

In this paper we contribute to this literature by focusing on how childhood health outcomes are influenced by individual socio-economic as well as macroeconomic factors. For our analysis we rely on retrospective information from the third wave of the Survey of Health, Ageing and Retirement in Europe (SHARELIFE) on a sample of roughly 18,000 respondents born in 10 Western-European countries before 1957. This survey provides detailed information on the health status of the respondent during childhood and information about the socio-economic environment in which he or she grew up. For the macroeconomic data we turn to the World Economy Database of Maddison (2010) which provides internationally and historically comparable time series on the Gross Domestics Product (GDP) of all countries that we are interested in.

As our main variable of interest we use the self-reported health status of the respondent. This is a categorical variable for which the respondents are asked to classify their health status as somewhere in the range between poor and excellent. A natural problem that arises with self-reported data is that the recall of the respondents may be low or distorted. Especially because for our survey respondents are looking back a very long time period we might encounter this problem. To this end, we use the methods of Smith (2009) to analyze the quality of the data by studying the relationship between the self-reported health status and objectively observable conditions such as childhood diabetes, visual problems and mental health problems.

In order to measure the socio-economic status of the environment in which the child grew up we follow Mazzonna (2011) and construct an indicator based on the number of rooms per capita in the household, the number of facilities in the house, the occupation of the main bread winner and the number of books in the household, as measured at the age of 10. As further indicators of household conditions we study whether the biological mother and the biological

father were present in the household at age 10, whether the parents were heavy drinkers and whether the child experienced hunger. In line with the "*fetal origins hypothesis* " (Gluckman and Hanson, 2005) we also focus on factors specifically active at or around birth by including an indicator of whether or not the parents were homeowners at the time of birth.

For the macroeconomic indicators we follow Van den Berg *et al.* (2006) and decompose the development of GDP over time into a cyclical and a trend component. We use the cyclical component to measure the state of the business cycle but also include the actual value of GDP at birth to take into account the positive relationship between the level of economic development and health (Deaton, 2007). As with the socio-economic indicators, we study macroeconomic conditions after birth separately from the macroeconomic conditions at birth.

Our main findings are that a positive socio-economic environment is associated with better health conditions throughout childhood, while malnutrition is extremely detrimental. With respect to the macroeconomic variables we find that being born during and growing up during a boom is detrimental to childhood health, whereas being born with a higher level of GDP is beneficial for childhood health. Due to the exogeneity of GDP from the individual perspective, the results from the macroeconomic indicators can be regarded as causal. The results based on the socio-economic indicators are, however, best regarded as associations.

The remainder of this paper is organized as follows. The next section introduces the data and explains the variables that we use in our analysis. Section 3 outlines our methodology and Section 4 discusses our estimation results. Finally, Section 5 concludes and provides some policy recommendations.

2. Data and Descriptive Statistics

As main data source we use SHARELIFE, a retrospective study conducted as part of the Survey of Health, Ageing and Retirement in Europe (SHARE) project. Although the SHARELIFE data has been used for a variety of questions, to the best of our knowledge no one has focused on the correlates of child health. From the data collected for the SHARELIFE survey we can construct a measure for our key variable of interest; child health. In addition, we can use the data to construct various measures indicating the social economic status of the household in which the child grew up. For the macroeconomic data we turn to the World Economy Dataset (WED) of Maddison (2010). The WED was designed specifically to provide comparable indicators of the development of the Gross Domestic Product (GDP) of countries around the world.

2.1. SHARELIFE Data

The Survey of Health, Ageing and Retirement in Europe (SHARE) is a longitudinal study that collects extensive information on the current socio-economic status, health and expectations of European individuals aged 50 and over and their partners. In 2008/2009 the third wave of data collection, known as SHARELIFE, asked all respondents to provide information not on their current situation but on their entire life-histories. The retrospective information ranges from childhood health, to accommodation and parental background, to complete work, accommodation and health histories during adulthood. SHARELIFE interviewed 26,836 individuals in thirteen European countries: Austria, Germany, Sweden, the Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, the Czech Republic and Poland.

In our empirical analysis we exclude Poland and Czech Republic because no reliable economic data is available for Warsaw Pact countries (3,791 observations) and Greece due to

data quality problems (2,951 observations). In addition, to focus on a homogenous group, we exclude the cohorts born before 1920 and after 1957 because they represent a small share of the sample (912 individuals). Finally, we drop observations for which we have missing values for one of the variables used in the estimations and individuals who did not live in Western Europe during their childhood: luckily, these represent only 6% of the total sample.

Our final estimation sample consists of 18,023 individuals born between 1920 and 1957 in ten European countries. Since our analysis focuses on the determinants of childhood health, we consider the period of life between birth and the 15th year of age. Our key variable of interest is derived from a subjective question in which respondents had to rate their health in childhood before age 16 on a five-point scale from poor to excellent. The advantage of using this indicator is that it summarizes in a single index a variety of conditions and circumstances that might have affected health status. In our analysis, we recode the original variable in three categories: 1. poor or fair health, 2. good health, 3. very good or excellent health.

To check the reliability of our measure, in Table 1 we estimate an ordered probit model to analyse how it relates to the occurrence of a set of childhood illnesses that respondents were asked to report. The results are in line with what found by Smith (2009) for the US using 2007 data from the Panel Study of Income Dynamics. In particular, health is negatively and significantly correlated with all childhood diseases but the most common ones, namely infectious diseases (e.g. measles, rubella, chickenpox, mumps, tuberculosis, diphtheria and scarlet fever) and broken bones and fractures.

[TABLE 1 ABOUT HERE]

As Banks *et al.* (2011), we construct three broad birth cohorts: those born before 1930, those born between 1930 and 1939, those born between 1940 and 1949 and those born after 1949.

In Figure 1 we report the percentage of respondents reporting very good or excellent childhood health by cohort and country. The graph shows a general decline in health status for the cohorts that experienced the Second World War during childhood (or the Civil War for Spain) in all countries besides Sweden and Switzerland, which were only peripherally affected by the Second World War.

[FIGURE 1 ABOUT HERE]

From the survey, we also have information on living conditions at birth and during childhood. For the conditions at birth, we include indicators for whether the parents were home-owners and whether they were living in a rural area (as opposed to a town or a big city) when the child was born. For the conditions during childhood, we construct a measure of socio-economic status (henceforth, SES) following the methodology of Mazzonna (2011). First, we construct four indicators of SES, as measured at the age of 10: the number of rooms per capita in the accommodation (excluding kitchen, bathrooms and hallways), the number of features in the house (fixed bath, cold running water supply, hot running water supply, inside toilet, central heating), the approximate number of books at home (none or very few – 0 to 10 books, enough to fill one shelf – 11 to 25 books, enough to fill one bookcase – 26 to 100 books, enough to fill two bookcases – 101 to 200 books, enough to fill two or more bookcases – more than 200 books) and the occupation of the main breadwinner (divided in three groups: 1. high skills, 2. medium skills, 3. low skills). Second, we use principal component analysis to construct a single index that summarizes the information provided by these indicators of SES. Table 2 shows that the first principal component, which is used to construct our SES index, explains more than 50% of the total variance and it is the only one whose signs of the factor loadings are consistent with a measure of socio-economic status.

[TABLE 2 ABOUT HERE]

In addition to the SES index, we also include indicators for whether the biological mother and the biological father were living in the same house as the child at the age of 10, which represent proxies for the general environment in which the child grew up.

Finally, we use information on health risk and malnutrition during childhood, which are important determinants of the health status of an individual (Alderman *et al*., 2006). For the former, we include an indicator for whether one of the parents drank heavily when the child was 15 years old or less. For the latter, as in Havari and Peracchi (2011), we use information from the general life section of the SHARELIFE questionnaire to construct indicators for whether the child suffered from hunger in the first two years of life, between the age of 3 and 9 and between the age of 10 and 15.

It is important to note that, as with all retrospective and longitudinal surveys, our analysis is conditional on the survival of the respondents: those who have suffered extremely negative health shocks during childhood or thereafter and have died cannot be part of our sample.

2.2. Macroeconomic Data

The World Economy Dataset of Maddison (2010) provides yearly data on the GDP per capita of countries around the world, expressed in constant 1990 dollars. We apply a trend/cycle decomposition to the logarithm of GDP using the Hodrick-Prescott filter with smoothing parameter 6.25, as suggested by Ravn and Uhlig (2002), using the time series from 1920 to 1971 separately for each country. Figure 2 shows the logarithm of the GDP and the smoothed series for an example country, Germany.

[FIGURE 2 ABOUT HERE]

Following Van den Berg *et al.* (2006, 2009a and 2009b), we then construct an indicator for whether the child was born in a recession, as opposed to a boom, and for whether there was an economic downturn when the child was aged 1-2, 3-9 and 10-15 (i.e. whether the average of the cyclical components of the decomposition of the GDP over the corresponding years was negative). We use the cyclical component to measure the state of the business cycle but also include the actual value of the logarithm of the GDP at birth to take into account the positive relationship between the level of economic development and health (Deaton, 2007).

Table 3 presents descriptive statistics for all the variables included in our analysis.

[TABLE 3 ABOUT HERE]

3. Methods

In order to statistically analyze the determinants of childhood health, we estimate a model of the type used by Case *et al.* (2005):

$$h^* = \alpha + X\beta + Y\gamma + \varepsilon \tag{3.1}$$

where h^* is the health status of the child, X is a vector of indicators at the individual level, Y is a vector of macroeconomic indicators, α, β and γ are the parameters of the model and ε is the error term. In our data, we do not observe directly h^* but its discrete counterpart h, which is recorded as an ordered variable that takes the value 1 if health in childhood was poor or fair, 2 if it was good and 3 if it was very good or excellent:

$$h = i \quad if \quad \tau_{i-1} \leq h^* \leq \tau_i, \quad i = 1,2,3 \tag{3.2}$$

for unknown τ_i, with $\tau_0 = -\infty$ and $\tau_3 = \infty$.

We estimate our specification through a standard ordered probit model. In order to differentiate between the prenatal and childhood impact of household and macroeconomic

indicators, the elements of the X and the Y vectors are measured in the birth year as well as during childhood. As outlined in the previous section, the X vector typically includes measures of the living conditions and environment, as well as gender and a full set of country and cohort dummies. The Y vector includes the value of the logarithm of the GDP per capita in the birth year and measures of the state of the business cycle.

In general, the theoretical relationship between parental socio-economic status and the health outcomes of the child are understood using some form of the life-cycle model proposed by Heckman (2007) and discussed in Currie (2009). In that model, childhood health is produced through inputs of altruistic parents who care about the well-being of their children. The parents must choose between alternative uses of their resources and their total amount of resources is constrained by earning abilities. Although the model can give rise to some very complex relationships, a number of straightforward conclusions that are relevant to our empirical analysis can be drawn from it. First of all, richer parents (that is parents with a higher socio-economic status) should be able to provide their children with higher quality health inputs. Hence, a higher socio-economic status should be associated with a healthier child. Second, parental behavior can have (positive and negative) externalities on the health of a child. Thus, children of heavy drinkers are probably less healthy because the side-effects of drinking (aggression and neglect) directly affect a child's health. Finally, from a macroeconomic point of view the model suggests that if the general level of income increases in a country more parents will be able to acquire better health inputs. Therefore, a higher level of GDP should be associated with a higher level of health.

The logic from the level of GDP does not, however, seem to translate to a relationship between the business cycle and childhood health. The intuitive expectation in this sense is that being born or growing up during a boom should be good for your health. The empirical evidence for numerous countries over different time periods, however, suggest that the

opposite relationship is at play. Specifically, Ruhm (2000), Dehejia and Lleras-Muney (2004) and Tapia Granados and Diez Roux (2009) all find that recessions are associated with an increase in general health conditions, while booms are associated with a decrease in health. The underlying mechanisms behind this relationship are that booms usually entail much more stress, more work by parents, an unhealthy life-style and more traffic accidents.

4. Estimation Results

Our main estimation results are presented in Table 4. Interpretation of the results is straightforward: a positive parameter estimate indicates that its accompanying variable has a positive association with childhood health and a negative parameter estimate indicates a negative association. Consider first the parameter estimates for the macroeconomic indicators. The recession indicators both at birth and for the age interval between 10 and 15 and the level of GDP at birth all have a positive impact on childhood health. These results imply that being born in a richer country or time positively influences childhood health whilst being born during a boom (the complement of a recession in our set-up) negatively influences childhood health. The latter result is in line with earlier findings by, for instance, Tapia Granados and Diez Roux (2009), as discussed above. As they focus on adult health outcomes such as mortality, our results effectively extend their findings to childhood health outcomes. Interestingly, our results indicate that this effect is present both during fetal stage and later in life. This suggests that also in child health, fetal origins (Gluckman and Hanson, 2005) play an important role.

Next, consider the parameter estimates for the household indicators. In line with expectations and earlier literature (see, Currie, 2009, for an overview) we find that the social economic status of the household has an important positive association with child health. That is, children growing up in a household with a higher social economic status experience less health problems in childhood. Also parental homeownership at birth is seen to be a positive

correlate of childhood health. This indicates that socio-economic factors matter both in the fetal stage as well as in later stages of childhood development.

Also the non-economic indicators of the household are seen to influence childhood health. Especially, we see that children growing up in a household were the father is not present experience worse health throughout their childhood and that children growing up with a parent that drinks heavily incur more health problems. In addition, children that are confronted with malnutrition at any stage of their development cycle are at risk of having health problems.

From the parameter estimates for the cohort and country dummies we can draw some tentative conclusions about the impact of the Second World War. Primarily, looking at the cohort dummies we see that children born between 1930 and 1949 do worse than their counterparts from before 1930 and after 1949 (the cohort born before 1930 was used as the reference group). Naturally, the war did not affect all countries equally. This comes clearly to fore when we consider the country dummies. Here we see that in countries with heavy military activity (Germany and The Netherlands) children experienced more health problems than in countries with less military activity (for instance, Italy and the benchmark country France) or no military activity (Sweden). While we do not want to attach a lot of weight to these conclusions, it is interesting to mention that in a more in-depth study of the regional heterogeneity of the Second World War, Havari and Peracchi (2011) find similar patterns.

Finally, consider the other variables present in our estimation model. Some of the results that stand out are that girls experience more health problems than boys and that living in a rural setting is good for childhood health. The latter finding is often attributed to better water quality and less pollution in the country side than in big cities (Van den Berg *et al.*, 2006).

We have performed a wide variety of robustness checks so as to understand the validity of our results. First, we have used different smoothing parameters for the Hodrick-Prescott filter

(100 and 500 as used by Van den Berg *et al.* 2006 and 2009b, respectively). Second, instead of using the ordered probit model from (3.1) we have used a regular probit model in which we compare being in good or excellent health to all other health statuses. Third, we have included a war dummy (but dropped the cohort dummy due to multicollinearity) that indicated the advent and duration of Second World War and the Spanish Civil war for the relevant countries (as in Havari and Peracchi, 2011). Finally, we have also included all the elements of the social economic status indicator separately instead of as a factor. All of these robustness checks are available upon request and did not change the conclusions that we can draw from our results. Regarding the social economic status, it is interesting to note that especially household facilities are the driving forces in the relation between the socio-economic status and child health.

5. Conclusion

In this paper we use a retrospective survey to study the association between childhood health and the socio-economic and macroeconomic environment in which the child grew up. We find that a positive socio-economic environment is strongly associated with better health conditions throughout childhood. Malnutrition, on the other hand, is found to have an extremely detrimental impact on childhood health. Regarding, the macroeconomic environment we find that being born during a boom and growing up during a boom both have a negative influence on childhood health. The level of GDP, however, has a positive impact on childhood health.

While the findings regarding the relation between the socio-economic factors and child health are well documented also elsewhere (see Currie (2009) for a survey), the findings regarding the macroeconomic indicators and childhood health outcomes are, to the best of our knowledge, novel. Especially, they extend the results of, amongst others, Tapia Granados and Diez Roux (2009) who show that economic booms are associated to increases in mortality

while recessions are associated with declines in mortalities. In that sense, we can conclude that also childhood health is anti-cyclical.

Due to the exogeneity of GDP from the individual perspective, the results from the macroeconomic indicators can be regarded as causal. The results based on the socio-economic indicators are, however, best regarded as associations. After all, there is substantial scope for unobserved factors that may be driving childhood health outcomes as well as the socio-economic conditions in which the child grows up. Establishing causality of socio-economic indicators, hence, poses an interesting and challenging alley for future research.

In terms of policy, our results suggest that governments should focus their efforts on smoothing the business cycle and promoting growth and that children in households with an adverse socio-economic environment should receive additional attention. More specifically, the results on malnutrition suggest that a policy of school lunches may be effective in battling childhood health problems.

References

Alderman, H., Hoddinott, J., & Kinsey, B. (2006). Long term consequences of early childhood malnutrition. *Oxford Economic Papers*, 58, 450-474.

Banks, J., Oldfield, Z., & Smith, J.P. (2011). *Childhood health and differences in late-life health outcomes between England and the United States*. NBER Chapters, 12445.

Case, A., Fertig, A., & Paxson, C. (2005). The lasting impact of childhood health and circumstance. *Journal of Health Economics*, 24(2), 365–89.

Case, A., Lubotsky, D., & Paxson, C. (2002). Economic status and health in childhood: the origins of the gradient. *American Economic Review*, 92(5), 1308–34.

Currie, A., Shields, M.A., & Wheatley Price, S. (2007). The child health/family income gradient: evidence from England. *Journal of Health Economics,* 26(2), 213–232.

Currie, J. (2009). Healthy, wealthy, and wise: socioeconomic status, poor health in childhood, and human capital development. *Journal of Economic Literature,* 47(1), 87-122.

Currie, J., & Hyson, R. (1999). Is the impact of health shocks cushioned by socioeconomic status? The case of low birthweight. *American Economic Review*, 89(2), 245–50.

Deaton, A. (2007). Height, health and development. *Proceedings of the National Academy of the Sciences,* 104(33), 13232-37.

Dehejia, R., & Lleras-Muney, A. (2004). Booms, busts and babies' health. *Quarterly Journal of Economics*, 119(3), 1091–1130.

Gluckman, P., & Hanson, M. (2005). *The fetal matrix: evolution, development and disease*. Cambridge and New York: Cambridge University Press.

Havari, E., & Peracchi, F. (2011). *Childhood circumstances and adult outcomes: evidence from SHARELIFE*. EIEF Working Paper 11/15.

Heckman, J.J. (2007). The Economics, Technology, and Neuroscience of Human Capability Formation. *Proceedings of the National Academy of Sciences*, 104(33), 13250–13255.

Maddison, A. (2010). Historical statistics of the world economy: 1-2008 AD. Avaiable at: http://www.ggdc.net/maddison.

Mazzonna, F. (2011). *The long-lasting effects of family background: a European cross-country comparison*. Munich Centre for the Economics of Aging Working Paper Nr. 245-2011.

Portrait, F., Alessie, R., & Deeg, D. (2010). Do early life and contemporaneous macroconditions explain health at older ages? An application to functional limitations of Dutch older individuals. *Journal of Population Economics,* 23, 617-642.

Ravn, M.O., & Uhlig, H. (2002). On adjusting the Hodrick-Prescott filter for the frequency of observations. *The Review of Economics and Statistics,* 84(2), 371-375.

Ruhm, C.J. (2000). Are recessions good for your health? *Quarterly Journal of Economics*, 115(2), 617–50.

Smith, J.P. (2008). Reconstructing childhood health histories. *Demography,* 48(2), 387-403.

Spencer, N. (2003). Social, economic and political determinants of child health. *Pediatrics* 112(S3), 704-706.

Tapia Granados, J.A., & Diez Roux, A.V. (2009). Life and death during the Great Depression. *Proceedings of the National Academy of the Sciences,* 106(41), 17290-17295.

Van den Berg, G. J., Doblhammer, G., & Christensen, K. (2009a). Exogenous determinants of early-life conditions, and mortality later in life. *Social Science and Medicine,* 69, 1591-8.

Van den Berg, G. J., Lindeboom, M., & Lopez, M. (2009b). Inequality in individual mortality and economic conditions earlier in life. *Social Science and Medicine,* 69, 1360-7.

Van den Berg, G. J., Lindeboom, M., & Portrait, F. (2006). Economic conditions early in life and individual mortality. *American Economic Review*, 96(1), 290–302.

Victorino, C.C., & Gauthier, A.H. (2009). The social determinants of child health: variations across health outcomes – a population-based cross-sectional analysis. *BMC Pediatrics*, 9, paper 53.

TABLES

Table 1. Predicting self-reported childhood health status

Ordered probit model. Dependent variable: self-reported health (1=poor of fair, 2=good, 3=very good or excellent)	
Infectious diseases	0.004
	(0.025)
Polio	-1.067***
	(0.101)
Asthma	-0.991***
	(0.059)
Respiratory problems	-0.808***
	(0.048)
Allergies	-0.334***
	(0.049)
Severe diarrhoea	-0.666***
	(0.087)
Meningitis/encephalitis	-0.687***
	(0.095)
Chronic ear problems	-0.577***
	(0.052)
Speech impairment	-0.534***
	(0.117)
Difficulty seeing even with eyeglasses	-0.362***
	(0.061)
Severe headaches or migraines	-0.330***
	(0.041)
Epilepsy, fits of seizures	-1.020***
	(0.122)
Emotional, nervous or psychiatric problems	-0.773***
	(0.079)
Broken bones, fractures	-0.027
	(0.034)
Appendicitis	-0.126***
	(0.031)
Childhood diabetes or high blood sugar	-1.739***
	(0.319)
Heart trouble	-1.173***
	(0.106)
Leukemia, cancer or malignant tumour	-0.559*
	(0.323)
Country and cohort dummies	YES

Table 2: Principal component analysis for childhood SES index

	Component			
	1st	2nd	3rd	4th
Rooms per person	0.4211	0.8197	-0.3861	0.0829
Books	0.5390	0.0139	0.5725	-0.6177
Number of facilities	0.5585	-0.1759	0.2937	0.7556
Occupation level	-0.4684	0.5449	0.6610	0.2169
Explained variance	0.5056	0.2056	0.1646	0.1242

Table 3. Descriptive statistics for the variables used in the estimation (N=18,023)

	Mean	Standard deviation
Female	0.545	0.498
Born before 1930	0.119	0.323
Born between 1930 and 1939	0.260	0.438
Born between 1940 and 1949	0.372	0.483
Born after 1949	0.249	0.433
Log GDP at birth	8.380	0.364
Recession at birth	0.427	0.495
Cycle negative age 1-2	0.440	0.496
Cycle negative age 3-9	0.543	0.498
Cycle negative age 10-15	0.511	0.500
Parent homeowner (at birth)	0.459	0.498
Born in a rural area	0.425	0.494
SES (at age 10)	0.183	1.496
No mother at home (at age 10)	0.040	0.196
No father at home (at age 10)	0.096	0.294
Hunger age 0-2	0.012	0.110
Hunger age 3-9	0.043	0.203
Hunger age 10-15	0.045	0.207
Parent drank heavily	0.086	0.280
France	0.116	0.320
Sweden	0.092	0.289
Denmark	0.106	0.308
Germany	0.100	0.300
Netherlands	0.111	0.314
Belgium	0.137	0.343
Switzerland	0.059	0.235
Austria	0.043	0.202
Spain	0.104	0.306
Italy	0.133	0.339

Table 4. The determinants of childhood health

Ordered probit model. Dependent variable: self-reported health (=1 if poor or fair, =2 if good, =3 if very good or excellent)	
Female	-0.122***
	(0.019)
Born between 1930 and 1939	-0.055*
	(0.033)
Born between 1940 and 1949	-0.064**
	(0.032)
Born after 1949	-0.026
	(0.039)
Log GDP at birth	0.128**
	(0.062)
Recession at birth	0.043**
	(0.020)
Cycle negative age 1-2	-0.028
	(0.021)
Cycle negative age 3-9	0.006
	(0.024)
Cycle negative age 10-15	0.068***
	(0.021)
Parent homeowner (at birth)	0.054***
	(0.020)
Born in a rural area	0.041**
	(0.021)
SES (at age 10)	0.037***
	(0.007)
No mother at home (at age 10)	0.040
	(0.049)
No father at home (at age 10)	-0.134***
	(0.033)
Hunger age 0-2	-0.175*
	(0.091)
Hunger age 3-9	-0.224***
	(0.060)
Hunger age 10-15	-0.121**
	(0.053)
Parent drank heavily	-0.135***
	(0.033)
Sweden	0.302***
	(0.045)
Denmark	0.399***
	(0.045)
Germany	-0.115***
	(0.038)

(*continues on the next page*)

Netherlands	-0.171***
	(0.039)
Belgium	0.234***
	(0.038)
Switzerland	-0.060
	(0.057)
Austria	0.160***
	(0.054)
Spain	0.226***
	(0.055)
Italy	0.407***
	(0.042)
Observations	18,023

FIGURES

Figure 1. Percentage of respondents reporting very good or excellent health by country and cohort.

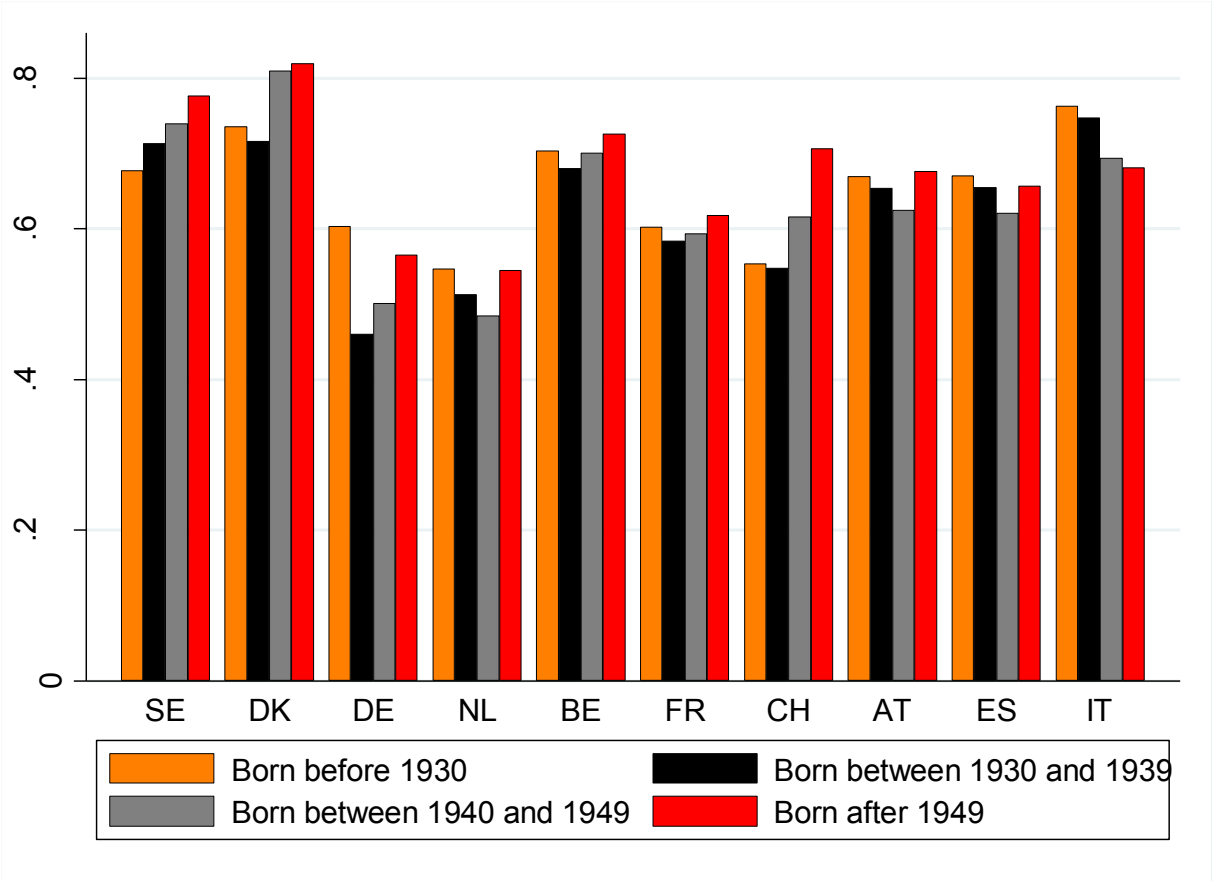
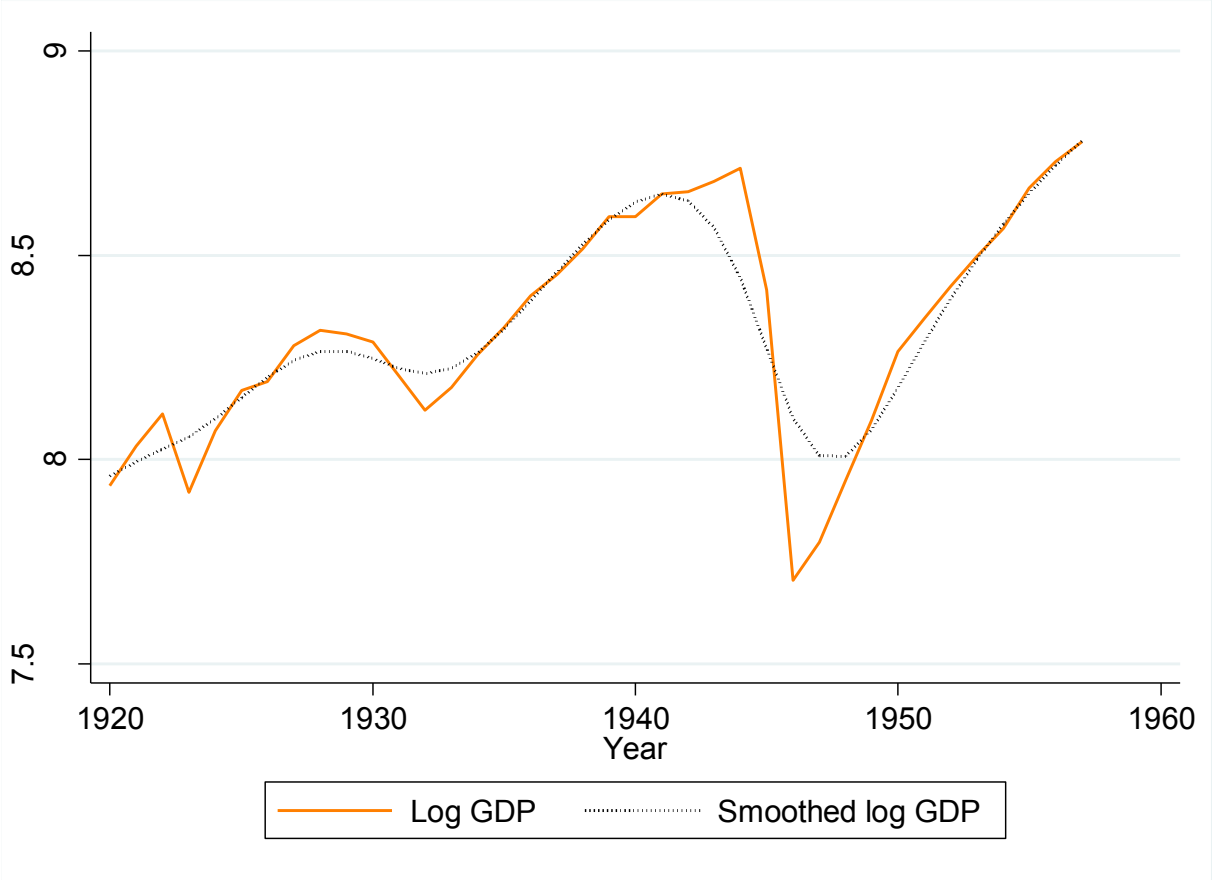


Figure 2. Log annual per capita GDP in Germany



List of research reports

12001-HRM&OB: Veltrop, D.B., C.L.M. Hermes, T.J.B.M. Postma and J. de Haan, A Tale of Two Factions: Exploring the Relationship between Factional Faultlines and Conflict Management in Pension Fund Boards

12002-EEF: Angelini, V. and J.O. Mierau, Social and Economic Aspects of Childhood Health: Evidence from Western-Europe

www.rug.nl/feb